

destroyed, the nest is never re-occupied by other pairs. An interesting incident was observed while on Mount Dulit. Espying on a tree the external signs of a Hornbill's nest, and a male *Buceros rhinoceros* perched close by, I shot the male, and while waiting for my Dyak collectors to make a ladder up the tree to secure the female, I observed several young male birds fly to the nest and assiduously ply the bereaved widow with food, a fact which seems to indicate a competition in the matrimonial market of the bird-world as severe as that among human beings. It is no easy matter to procure embryos or nestlings of Hornbills, for the natives are inordinately fond of both as articles of diet, and, further, are always anxious to secure the tail-feathers of the adults to adorn their war-coats and hats. The native method of catching the female during incubation is ingenious, though decidedly brutal. The tree is scaled, the resin-like substance is broken away, and the frightened bird flies from her nest up the hollow trunk of the tree, but is ignominiously brought down by means of a thorny stick (the thorns pointed downward), which is thrust after her and twisted about until a firm grip in her plumage and flesh is obtained. The Dyaks, never very faithful observers of nature, believe that the female is shut up by the male so that, after hatching out her eggs, she may die, the maggots in her putrefying body affording food for the young. One very curious habit of *Buceros rhinoceros*, which I have not hitherto seen noted, is the rapid jumping up and down on a branch with both feet together. This jumping motion is imitated by the Kyans and Dyaks in their dances, the figure being known to the Kyans as "wan blingong."

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XLVI.—*An Ornithological Expedition to the Zambesi River.*

By BOYD ALEXANDER, F.Z.S.

(Plate XI.)

WITH the intention of investigating thoroughly the ornithology of the Zambesi region, we set out from Chindi on July 18, 1898, in one of the river steamers, which was to

convey us as far as Tete. Owing to an exceptionally dry season our progress was painfully slow, since the course of the stream had become complicated through sandbanks, upon which our boat continually stuck ; but stoppages at various stations along the river to take in wood were delays which facilitated our collecting. On August 9, Tete was reached, whence we left for Mesanangue, a little village some 70 miles higher up the river, the furthest point our steamer could reach owing to the impassable Kabrabassa rapids. Here, accordingly, we disembarked, and prepared to trek to Chicowa, distant about 72 miles, whence we would once more have a clear reach of river for our own small boats, which we had brought out from England, and were capable of being carried in sections. From the difficulty of obtaining porters, we stayed at Mesanangue longer than we expected, but it allowed us to form the nucleus of a collection upon which we based our future work. With the help of beads and good calico we at length succeeded in getting our carriers, and we reached Chicowa on September 3, after a four days' trek over a rough country.

At Chicowa we found ourselves once more on the trade route to the north, while during our encampment several white traders passed through in quest of ivory and cattle.

On October 16, I and Mr. Ramm, my taxidermist, started by river to Zumbo. Our boat was manned by native paddlers, who were extremely good at their work, accomplishing on an average 15 miles a day, and then stopping towards night-fall to camp on some convenient sandbank, where each man cooked his 1 lb. of Kaffir meal, the only food he had in the day. Trained from childhood to paddle in canoes, these men are adepts at the work, and as they sit paddling on each gunwale of the boat, they break out now and again into chants at the signal of a long " whoo-hoop " from the captain of the crew, who stands at the helm. These boating-songs are by no means unmusical, while all seem to know them, since they are handed down from father to son, and a further charm is added to them by the accompaniment of the paddles striking the water with even measure. By means of these paddlers we

reached Zumbo on November 4, having collected in different localities during the journey. Zumbo is the last place in Portuguese East Africa, and just beyond it, at the point where the Loangue river falls into the Zambesi, a line drawn true north and south determines the boundary of British and Portuguese territory. Zumbo is a military station, consisting of a commandant and a company of native soldiers. A few white-walled houses of brick close to the river belong to the Portuguese inhabitants, while on the rising ground behind is the extensive native village, whose straw-built huts bear a striking contrast to the dwellings of the white people.

With a fresh crew of paddlers, we left for the mouth of the Kafue river, in lat. 16° south, up which we journeyed for five days, and were then stopped by impassable rapids, the water converging into a narrow rocky defile and falling from a height of 15 to 20 feet. Lack of means and the near approach of the rainy season prevented the negotiation of these rapids, so we started for the coast the same way as we had come, bringing with us a collection of 914 bird-skins, which included 212 species. Both when going up the river and returning, the Portuguese commandants, especially at Chishomba, just above Chicowa, showed us much kindness, while many of the native chiefs on our route presented us with fowls, eggs, and meal.

The natives of Mashakolumbwe-land, through which the Kafue river flows (or the Kafukwe river, as it is known by the natives), showed us no hospitality, leaving us severely alone. They are not a nice race, for treachery lies at the back of their characters. Their features are clearer cut than those of the Zambesi natives, and they dress their hair in a peculiar manner, into the shape of a hayrick, dyeing it with a red chalk which they get out of the ground.

The Kafue, as far as we went, is a magnificent river, with deep water and clean-cut banks clothed with wood, while the stream never flows more than two miles an hour, very different from the current of the Zambesi, which runs in places from eight to nine miles an hour. Where the Zambesi passes through flat low-lying country, great stretches of reed-beds

meet the eye, and these become thicker and more extensive where a dried-up watercourse makes a river in the wet season ; while a watercourse like this becomes a kind of highway for many forms of animal life both going to and coming from the water. The spoor of the leopard is there, and near the edge of a pool a fresh imprint of a lion's as recent as the night before, while in other places the sandy mud is pitted by the great hoof of the hippopotamus, and besides all these there are hosts of other spoors, down to those of small antelopes, mixed up in thick confusion. And signs of bird-life are also not absent. There, on a piece of muddy sand, is a single imprint of a Heron which has chosen to stand on one leg, while stray feathers and the footmarks of Guinea-fowls mark the course of the flock towards the water. Towards sundown the hippopotamus leaves the deep water of the river, and makes for some nightly feeding-ground off the dried-up watercourse. As he moves along, hollow grunts strike the ear whenever he raises his bumpy forehead above water, the next moment to disappear with a snort like a violent sneeze from a horse, and just as dusk is closing in the stillness is broken by the sound of water rushing off his broad back as he emerges from the stream. Then, in the gloom, a great form is visible: the animal has raised himself, and for a moment sits on his haunches and, with a huge yawn, opens a gigantic mouth, looks sleepily from side to side, and then plods slowly off to the feeding-ground. When corn is growing up the hippopotamus does a good deal of damage, but the natives, in order to preserve their crops, have only to hedge in their plantations by the riverside with a low slender fence of fish-cane that a cat could knock over ; yet it is quite enough to turn a hippopotamus, which rubs its nose against the obstacle, and, thinking it serious, wanders elsewhere.

In places, especially below Tete, the river sometimes attains three miles in width, but the view across is often interrupted by stretches of sandbanks, by small circular islets, and these are covered with tall reeds and fish-cane which struggle for foothold, pushing into the water the

smaller reed-growth, whose tender green blades are for ever streaming like pennons upon the swift swirling current. And in the neighbouring reed-beds and thick clumps of bushes that surround snug pools of water all the bird-life seems to congregate. The babbling *Cossypha heuglini* pours out his mellow notes from the thickest portion, but seldom lets his presence be seen, and then from time to time the handsome large Yellow Weaver (*Xanthophilus xanthops*) flashes past to complete the nest which hangs from some slender bough, and disappears up the narrow network tunnel of the half-finished home. At the noise of a breaking twig, the warning notes followed by the repeated clear-drawn whistles of the Black-and-white Bush-Shrike (*Laniarius mosambicus*) will cause a pair of Bulbuls (*Pycnonotus layardi*) to set up their noisy cries, and these are soon backed up by the clapping wings of Pigeons. As evening comes on, many Doves come down to the pools for their last drink, and among them may be noticed the elegant little Long-tailed Dove (*Ena capensis*). Then among the fish-cane are hosts of Weavers making great chatterings, while more cautious still is the Waterhen (*Limnocorax niger*), whose dark body catches the eye as the bird threads its way through the grass before venturing out into the open to tread the soft carpet of weed on the water. And from time to time little "strings" of Estrelidas hasten to their roosting-places before night overtakes them.

Crocodiles are numerous in the river, and during the year quite a number of natives, especially women, become their prey. When we were at Zumbo, a woman with a child on her back was taken while she was washing at the river. All that night our sleep was disturbed by feminine wailing, but the next morning other women, perfectly callous, were bathing at the same place, and not taking the slightest precautions against seizure by the crocodiles. An old crocodile which has once eaten human flesh becomes very bold and cunning. In the dry season the river in places leaves bare stretches of sand, and very often the women have a considerable distance to traverse from the village before they reach the water's edge to fetch water and do their washing.

The crocodile soon learns to know these spots and, watching his opportunity, journeys up the river for two or three hundred yards and then creeps out on to the sand, whose colour assimilates well with his body. In a very short time he has executed a *détour* and is behind his victim, and with one whisk of his powerful tail the woman is in the water and he after her. I once witnessed an example of this. A piercing cry made me turn my eyes in the direction whence it came, when I saw a woman struggling in the water and a crocodile just disappearing after her. The Portuguese commandant at Zumbo, to whom I mentioned the incident, said that the crocodile often resorts to the tactics I have just described.

There is a considerable sameness about the Zambesi scenery, but now and again there are localities of great beauty. The Lupata gorge, below Tete, and the three lupatas above Zumbo, are good examples. At these places the river is deep and devoid of sandbanks, flowing swiftly through steep rocky hills, clothed up to their summits with trees, among which the giant baobabs with their stout arms stand out conspicuously. Beyond these lupatas or gorges the scenery again becomes ordinary, the hills recede into the background, leaving stretches of flat country dotted over with groves and clumps of tall acacia-trees, while a "chia," or native village, with its kraals of mud walls and straw roofs, standing in the midst of marpela-fields, frequently meets the eye. On the rocky volcanic hills and stony soil the woods are composed of *Copaifera mopane*, whose leaves turn a russet-red in autumn and a beautiful tender green in spring. These woods are extremely monotonous and silent, and one may go for several miles without seeing any sign of bird-life, and then suddenly come across a party of birds—Finches, Flycatchers, Shrikes, and Tits, all congregated together and threading their way through the woodland, appearing just as if one had accidentally struck one of their highways to some favourite locality.

Beyond Zumbo the soil becomes less stony and richer, consequently the woods are thick and in many places become dense forest.

1. *PITTA ANGOLENSIS* \* (Vieill.).

A most difficult bird to observe. Only once did we catch a glimpse of the brownish-green back of an individual disappearing into a thicket. Frequenting the thick woods, especially where the soil is stony, and never taking to flight, this *Pitta* tantalizes the listener by giving out its song—if it can be so called—of four mellow notes, rapidly uttered as it runs along the ground, sounding at times ventriloquial in expression, and which might be likened to the syllables “lop, lop, lop, pleep,” often repeated. This song is commenced on the approach of the breeding-season, and during that period it is uttered fitfully throughout the day, when it is very often the only bird-voice to be heard in the woods. Just before the threatening of a storm, the bird becomes peculiarly persistent in its song. We first heard this *Pitta* at Zumbo on November 8, and continued to notice it up to the middle of January, when it became once more silent. Probably it had then commenced to breed.

2. *CINNYRIS CUPREUS* (Shaw).

This Sun-bird is very partial to localities near the river where patches of flowering weed grow, from which it is with difficulty driven away, always returning to the same spot after a short circuitous flight even more jerky and erratic than that of *C. gutturalis*, a bird which is often found in its company. It was close to the mouth of the Shiré river, where we landed on July 21 for our midday meal, that we observed this species frequenting a strip of red-flowering plant close to a cluster of native huts. After chasing the birds to and fro for some time, they got to know our tactics and became very cunning, dropping down at our approach into the bottom of the weed, where they crept about like mice. Towards evening they resorted to a belt of fish-cane, through which they threaded their way after the manner of *Estrelidas*.

Our four specimens were moulting, and two of them were young males in the plumage of the adult female.

\* I have mainly adopted the nomenclature in Capt. Shelley's ‘Birds of Africa.’ The measurements &c. given were taken in the field.

3. *CINNYRIS SHELLEYI*, sp. nov. (Plate XI.)

*Adult male.* Entire head, neck, back, and lesser wing-coverts metallic green, with a slight golden gloss on the back of the head and neck and on the mantle; wings and tail black. At the base of the metallic-green throat is a narrow steel-blue collar, followed by a broad bright scarlet pectoral band, the feathers of which are partially barred with steel-blue, remainder of the underparts blackish brown. Bill black; iris dark brown; legs and feet black. Total length (measured in flesh) 4·65 inches, culmen 0·85, wing 2·5, tail 1·7, tarsus 0·65.

*Adult female.* Similar in plumage to that of *C. mariquensis*, but more yellow and less mottled with dusky on the underparts. Total length (measured in flesh) 4·56 inches, culmen 0·85, wing 2·4, tail 1·7, tarsus 0·65.

This species is nearly allied to *C. bifasciatus*, which it resembles in size, but it differs in having the bastard primary smaller and more pointed, in this character resembling *C. mariquensis*.

The most marked specific characters of *C. shelleyi* are—the pectoral band of sealing-wax red, which is similar to that of *C. erythroceria*, and the blackish-brown breast, which resembles that of *C. bouvieri*. The golden gloss on the upper parts is also much less than in *C. mariquensis*. The position, therefore, of this new Sun-bird is intermediate between *C. erythroceria* and *C. mariquensis*.

We discovered this species about 60 miles below where the Kafue river falls into the Zambesi. Both birds of the pair are adults in full breeding-plumage, and were shot in the latter part of December, being at the time in company with a number of *Chalcomitra gutturalis*, and, like that species, were busy in extracting the nectar from the acacia-blossoms. The note of the male was a small flute-like whistle.

4. *CINNYRIS MICRORHYNCHUS* Shelley.

The most southern known locality for this species before we obtained our specimens was Songue, in Nyasaland, where Mr. Alexander Whyte procured an adult male in full breeding-plumage in June. During our stay at Zumbo, on





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CINNYRIS SHELLEYI

the Zambesi, considerable numbers of these Sun-birds suddenly appeared on December 13, among the acacia-growth then in full blossom. We collected seven specimens, one adult female and six males, two of which were moulting, while the remaining four were in dull plumage with upper parts similar to those of the adult female, chin and throat brownish black, underparts yellowish mottled with brown. The process of moult in the other two birds goes to show, in our opinion, that they are discarding the breeding-dress for this dull plumage just described. According to Mr. Alexander Whyte, they breed about June in Nyasaland, and therefore by the end of December breeding would have finished, and the adult males would then have assumed, or nearly so, a dull plumage, for these dull-plumaged males we obtained were certainly adults and not birds of the year, in fact, according to our note-book, "the sexual organs were too much developed to be those of immature birds."

	Total length (measured in flesh).			
	Culmen.	Wing.	Tail.	
	in.	in.	in.	in.
Adult ♂ (moulting) . . . . .	4·25	0·062	2·2	1·56
„ (dull plumage) . . . . .	4·23	0·061	2·1	1·55
Adult ♀ . . . . .	3·6	0·059	1·8	1·35

##### 5. CINNYRIS LEUCOGASTER Vieill.

With the exception of *Chalcomitra gutturalis*, this species was the most abundant of the Sun-birds along the river, but at the same time its distribution was local. Wherever the thick woods gave way to open spots interspersed with acacia-bushes these little Sun-birds mustered in considerable numbers, full of activity, hardly heeding one's approach, but devoting all their attention to the acacia-blossoms. After emerging from a silent and gloomy forest, it was a relief to come to such a spot, looking like a glimpse of fairyland itself: the bright light playing upon the tender green of the acacias, starred with innumerable feathery blossoms, among which the Sun-birds were revelling, the sunlight catching the peacock-blue of their backs as they travelled with jerky dancing flight from one bush to another; while from time to

time they would burst out into chattering little songs, whose notes closely resembled those of the Siskin, and these now and again giving place to the call-note—a plaintive whistle.

All the males we obtained near Tete in August and at Zumbo in December were in full breeding-plumage, the sexual organs being largely developed. The feathers of the fore-heads and chins of many were literally steeped in the yellow powder of the acacia-flower. The male sex appears to predominate to a large extent in this species.

Capt. Shelley records the range of this Sun-bird as follows:—"From the Quanga and Zambesi rivers southward into Damaraland and Natal."

#### 6. CINNYRIS VENUSTUS (Shaw).

Our two specimens agree with typical *C. venustus* both in measurements and coloration of plumage. Typical specimens in the British Museum have the following measurements:—

	Wing.	Culmen.	Tail.
	in.	in.	in.
Adult ♂, Cape Verde . . . . .	1·9	0·06	1·53
" " " " . . . . .	2·0	0·06	1·4
" River Gambia . . . . .	1·92	0·06	1·3

Our birds measure:—

Adult ♂, Zumbo . . . . .	1·89	0·06	1·3
" " " " . . . . .	1·85	0·06	1·32

According to Professor Bocage, Anchieta found this species in Benguela, and now it appears we have increased its range as far eastward as Zumbo, on the Zambesi, while it is quite probable that it will be found to unite with its closely-allied form, *C. falkensteini*, in North-eastern Africa. In *C. falkensteini* the measurements are larger and the bill considerably stronger:—

	Wing.	Culmen.	Tail.
	in.	in.	in.
Adult ♂, Kilimanjaro . . . . .	2·2	0·7	1·7
" Zomba, Nyasaland.	2·18	0·7	1·75

#### 7. CHALCOMITRA GUTTURALIS (Linn.).

We first met with this species near the mouth of the Shiré river on July 31. A strip of tall orange-red flowering

plants, not far from the river, attracted a great number of these birds, as well as large flocks of Weavers (*Pyromelana sundevalli*). We found it easy to obtain our specimens; in fact it was difficult to drive the birds away from this clump of flowering weed, while from time to time they took refuge in neighbouring thick-leaved trees. The flight is jerky and erratic, and the note, often uttered on the wing, is loud for the size of the bird, resembling a rapid rendering of the Greenfinch's call. These Sun-birds lived in colonies along the river; their distribution, however, depended to a great extent upon flowering plants, and especially acacias, of whose blossoms they were extremely fond. Their distribution was decidedly local, and from the time we left the locality of one colony till we came across another hardly an individual was observed.

Regarding their habits, they are seldom found very far away from water; in fact, more than once we observed a party hovering to and fro over the river itself, catching insects. When not breeding, the males generally travel from one spot to another without the company of the females. During the heat of the day, when all other birds have hidden themselves away in the cool depths of the wood, they are abroad, seeming to take a delight in the intense heat, and it is only in the early morning and evening that they retire into the thick under-cover. As the pairing-season approaches, the male never leaves the side of his mate, and, when courting her, has a quaint way of swaying his body from side to side, as if on a pivot, right in front of her. Moreover, he is constantly uttering his song from the topmost twig of some tall acacia-tree, the notes, both in tone and rendering, being by no means unpleasant, and closely resembling those of the Lesser Redpoll. When feeding on the buds of a tree, this Sun-bird generally attacks them from some convenient branch above, to which it hangs all the time by its feet, or it will give a great stretch forward in order to bring a bud within its reach.

Above Zumbo, near the river, we discovered a nest on December 21. It was oval-shaped, and attached to three

slender branches of an acacia-tree, about 20 feet up. The structure was flimsy and untidy, composed of fine grass interwoven with fragments of skeleton-leaves, cobwebs, and cocoons, and lined with the fluffy down of some weed. The depth of the nest was 3 inches, the circular entrance being about an inch from the top, the hole running perpendicularly down. Not a yard away from it was a nest of bees; and we noticed that the pair of Sun-birds constantly made use of these bees as guides to some rich flower-store in the vicinity, the male frequently following the course of the bees, and more than once attacking a returning bee and carrying it off. After we obtained the female, the male bird became very shy, only to appear now and again above the high trees in the vicinity.

The last locality where this species was observed in any great numbers was some 60 miles below the mouth of the Kafue river, which we reached on December 31. The land was low-lying and covered with groves of tall acacia-trees. The birds were revelling among the freshly-opened blossoms. About the middle of December, the commencement of the rainy season in the Zambesi region, they begin to breed, and by the time the young are hatched the store of insect- and flower-life is abundant. At other times of the year partial migrations of this species occur, the birds following in the wake of rain-clouds. On several occasions we observed, after a local shower, the particular locality was invaded soon after by companies of these birds.

All the male specimens, six in number, we obtained on July 31 were in full breeding-dress. Further up the river, at Zumbo, on November 10 and 13, and again on December 16, we collected for the first time five immature males, which had only assumed the plumage of the adult as far as the chin, throat, fore-neck, and chest.

On examining our series and the dates on which the specimens were obtained, it would appear that the full plumage of the adult is not assumed till the second year. The plumages of our immature males are perfect in their way, showing no signs of a direct transitional change.

Capt. Shelley records the following range for this Sun-bird :—"From Angola into Damaraland, and from thence throughout Eastern Africa from Natal to 1° N. lat. on the Somali coast."

8. *CHALCOMITRA KIRKI* (Shelley).

By no means abundant. We never met with any fully adult birds, obtaining our two immature males with the metallic-coloured throats of the adult on November 12 at Zumbo, and subsequently two females as we journeyed up the river.

The southernmost range of Kirk's Amethyst Sun-bird is the Limpopo river. It appears to be the north-eastern representative of *Chalcomitra amethystina* (Shaw), from which it differs in being slightly smaller and in possessing no metallic colour on the upper tail-coverts.

9. *ELÆOCERTHIA FISCHERI* Reichenow.

Decidedly scarce. Our only specimen was obtained on August 1, in a grove of tall trees at the little village of Umquasi, on the left bank of the river, and about 60 miles below Tete. The bird was extremely shy, flitting from one tall tree-top to another, and never descending to the undergrowth of acacia-bushes, which was frequented by numbers of *Chalcomitra gutturalis*. The range of this species appears to be from the Zambesi river northward into Eastern Africa as far north as Manda Island. Both in measurements and plumage, *E. fischeri* runs the allied species, *E. verreauxi*, extremely close. The British Museum possesses two typical specimens of the former from Manda Island, while of the latter there is a good series of specimens collected in Natal and Zululand, and these vary considerably *inter se* as regards measurements. The slightly greyer upper parts and paler shade of the underparts appear to be the only characters that separate it from *E. verreauxi*, but it is doubtful whether these will remain constant when a larger series of both forms is forthcoming.

10. *ANTHOTHREPTES HYPODILA* (Jard.).

Our only specimen was obtained on July 30 near Tete,

where the country is well wooded and impenetrable. It was an adult male in full breeding-plumage, and by the size of the organs it must have been breeding.

*Adult* ♂. Total length (measured in flesh) 3·9 inches, culmen 0·05, wing 2, tail 1·6. Iris black.

#### 11. *PARUS NIGER* Vicill.

Locally distributed, and found either in pairs or in small parties threading their way through the undergrowth. We procured a good series. The plumage of the males shot in August was very fresh, the feathers of the wings, under tail-coverts, and tail being conspicuously edged with white, while in those obtained near the Kafue river in January the white edgings, especially on the primaries, under tail-coverts, and tail, had almost disappeared.

*Adult* ♂ (Kafue river). Total length (measured in flesh) 6 inches, wing 3·25, tail 3·1. Iris black; legs and feet lead-colour.

*Adult* ♀. Total length (measured in flesh) 5·7 inches, wing 3, tail 2·94.

#### 12. *PARISOMA PLUMBEUM* (Hartl.).

One specimen obtained, and in the vicinity of the Kafue river.

*Adult* ♀. Total length (measured in flesh) 5·5 inches, wing 2·62, tail 2·8. Iris hazel; legs and feet slate; upper mandible brownish black, lower horn-colour.

#### 13. *MOTACILLA VIDUA* Sundev.

Common along the river. The male possesses a pretty song, which it gives out in a warbling fashion from the top of rocks skirting the river. This handsome Wagtail is a fearless bird. On one occasion we remember seeing an individual running to and fro on the back of a huge crocodile that lay basking on a sand-spit. On October 8 the young in their brown plumage were abroad, while the adults had commenced to moult.

#### 14. *MOTACILLA FLAVA* Linn.

Considerable numbers of immature birds put in an appearance for the first time at Zumbo on December 10.

## 15. ANTHUS RUFULUS Vieill.

This Pipit frequents waste pieces of land. In the pairing-season the male will now and again rise up into the air vertically to a height of about 40 feet, and give out notes similar to those of the Meadow-Pipit. It breeds towards the end of July.

## 16. MACRONYX CROCEUS (Vieill.).

A pair in breeding-dress obtained near Senna on February 8. They frequented a portion of flat ground, more or less overgrown with small bushes, and were by no means shy. The male bird kept perching on the tops of the bushes and uttering a pleasant song, after which he would suddenly shoot straight up into the air and alight once more a little further off.

*Adult.* Total length (measured in flesh) 8·1 inches, wing 3·8. Iris brown; upper mandible blackish brown, lower slate-colour; legs and feet flesh-colour.

## 17. MACRONYX WINTONI Sharpe.

An immature specimen obtained in long grass at Chicowa on September 4.

*Immature* ♀. Differing from the adult in having the upper parts paler and the feathers less broadly edged with rufous buff; fore-neck sandy brown, mottled with streaks of brownish black; throat whitish, tinged with sandy, with a few feathers becoming pink; centre of underparts light pink.

Length (measured in flesh) 7·5 inches, culmen 0·45, wing 3·54, tail 3·15. Iris brown; upper mandible brown, lower horn-colour; legs and feet brown.

## 18. MIRAFRA FISCHERI (Reichen.).

Not common, frequenting hilly woodland where the grass is long, or where it has lately been burnt. When flushed this Lark flies forward for a short distance, and then drops vertically to the ground again. Three specimens obtained.

*Adult* ♂ (Chicowa). Total length (measured in flesh) 6·2 inches, wing 3·12. Iris hazel; legs and feet flesh-colour.

## 19. MIRAFRA NIGRICANS (Sundev.).

Two adult males and one female shot on December 26 out



of a flock of three, which frequented open land where the trees had been felled by the natives and the ground sown with grain. The feathers of the mantles of these three individuals had almost lost their pale edgings.

*Adult ♂*. Iris hazel; legs and feet greenish white.

*Locality*. Zambesi river, left bank, near mouth of Kafue river.

This species ranges from the Transvaal into Benguela, but this is the first record of its occurrence to the north of the Zambesi in Central Africa.

#### 20. PYRRHULAUDA SMITHI Bp.

We collected a fine series of this Bunting-Lark from Tete, Zumbo, and the vicinity of the Kafue river. It frequents flat portions of stony ground. In the breeding-season the male sings on the wing, rising vertically up from the ground, and descending to earth again with hardly a beat of the wings. The call-note, uttered on the ground, is a ventriloquial pipe. Living in colonies, these birds are continually shifting from one locality to another, according to the supply of food. At Zumbo they suddenly appeared on December 13, when the grain had just been sown. The food consists chiefly of grass-seed.

*Adult ♂*. Iris black; bill bluish horn-colour; legs and feet whitish flesh-colour. Several of our specimens are immature males in the plumage of the adult female.

#### 21. EMBERIZA FLAVIVENTRIS (Vieill.).

Inhabits high ground, and especially where the wood is composed of *Copaifera mopane*.

#### 22. FRINGILLARIA TAHAPISI (Smith).

Common where the ground is hilly and overgrown with long grass. Breeds about the middle of August.

*Adult ♂*. Iris brown; upper mandible brown, lower orange-yellow; legs and feet brown. Young males resemble in plumage the adult female.

#### 23. PETRONIA FLAVIGULA (Sundev.).

Not common. A pair only obtained in woody country near

the Kafue river. This Sparrow possesses a loud musical chirp.

*Adult.* Total length (measured in flesh) 5·9 inches, wing 3·5. Iris hazel; legs and feet slate; upper mandible brown, lower light horn-colour.

24. *PASSER DIFFUSUS* (Smith).

Common. Never observed in flocks, but scattered about singly and in pairs. Breeds in January during the rainy season.

*Adult* ♂. Iris brown; bill black; legs and feet brown. In old males the bill becomes black.

25. *SERINUS ICTERUS* (Bonn. et Vieill.).

Common along the Zambesi river, and found in small flocks.

26. *HYPOCHERA NIGERRIMA* Sharpe.

Moult in August.

27. *HYPOCHERA AMAUROPTERA* Sharpe.

A single specimen, an adult male, at Zumbo, January 17, 1899.

Total length (measured in flesh) 4·4 inches, wing 2·6. Iris black; legs, feet, and bill orange-red.

28. *VIDUA PRINCIPALIS* (Linn.).

Breeds in large colonies, suspending their nests from the topmost twigs of tall acacia-trees. They keep much to the waste plots of land near villages. The males have a laboured flight, as if they were weighed down by their long tails, which they commence to assume towards the end of October. In a flock the males predominate to a very large extent over the females.

29. *VIDUA PARADISEA* (Linn.).

Not nearly so common as the preceding species.

30. *PENTHETRIA ARDENS* (Bodd.).

One adult female at Zumbo, December 12, 1898.

31. *PENTHETRIA MACRURA* (Linn.).

An adult female, shot from a pair at Zumbo on January 18.

This is the southernmost locality yet recorded for this species, hitherto ranging from Senegambia to Angola across Equatorial Africa and the Lake countries.

### 32. PENTHETRIA ALBONOTATA (Cass.).

We met with this Weaver at Zumbo on November 7, a small flock consisting entirely of males in full winter plumage. They frequented a stony bush-grown locality near the village, and hardly a day passed without our finding them in the same spot. It is a remarkable-looking Weaver, the bar of white on the wings as it takes to flight at once attracting attention. Beyond Zumbo, on December 24, we observed for the first time a small party of males in full breeding-dress. At first it was hard to realize that they belonged to the same species as those we had seen at Zumbo. For one thing, their habits seemed to have altogether changed, as, instead of pottering about among bushes and getting up almost at one's feet, they resorted to extensive marshy reed-beds and were as wild as Hawks, travelling with a strong flight and as straight as a die for a considerable distance before alighting upon the next group of reed-heads. Their presence in this black velvety plumage came to us all the more as a surprise, since from the time of leaving Zumbo we never came across any individuals in the transitional state, as in the cases of *Pyromelana flammiceps* and *P. sundevalli*. This struck us as remarkable, giving the idea that the males must retire and hide themselves away somewhere, to suddenly appear one fine morning in all their splendour of breeding-costume. Our six males in summer plumage vary considerably in measurements.

	Total length (measured in flesh).	Wing.	Tail.
	in.	in.	in.
Adult ♂ . . . . .	7·0	3·2	3·9
" . . . . .	6·5	3·0	3·5
" . . . . .	6·0	2·9	3·0

Iris brown; bill bluish horn-colour; legs and feet dark brown.

33. PYROMELANA FLAMMICEPS (Swains.).

Not so common as *P. sundevalli*, from which they can be readily distinguished in flight by their larger size and blackish wings. The song of the male bird is peculiar—a running voluble “tiz,” uttered from the depths of some reed-bed, being especially loud after rain.

34. PYROMELANA SUNDEVALLI (Bp.).

This form appears to be well founded. It is the northern race of *P. oryx*, from which it differs in being smaller, the black on the head and throat more restricted, and the red on the breast more extended. Our birds, of which we have a fine series, agree in plumage and measurements with those in the British Museum obtained by Livingstone on the Zambesi, and also with two specimens from Mpindi, Upper Shiré river, which latter, in our opinion, should be referred to *P. sundevalli*, and not to *P. nigrifrons*.

*P. sundevalli.*

	Wing. in.	Culmen. in.
Adult ♂, Zambesi river ( <i>Kirk</i> ) .....	2·6	0·5
”    ”    ”    .....	2·5	0·5
”    ”    ( <i>Alexander</i> ) ..	2·6	0·48
”    ”    ”    ..	2·62	0·5
”    ”    ”    ..	2·63	0·5
”    Kafue river    ”    ..	2·53	0·49

*P. oryx.*

	Wing. in.	Culmen. in.
Adult ♂, Transvaal .....	3·1	0·6
”    Natal .....	3·0	0·54
”    Potchefstroom .....	3·2	0·6
”    Bloemfontein .....	3·0	0·56
”    Maritzburg .....	2·9	0·53
”    Elands Post .....	2·86	0·59

The range of *P. sundevalli* should therefore be from Damaraland to Benguela and from the Zambesi to the Lake regions.

This is the most plentiful of all the Weavers, being common

everywhere, and it appears to be equally at home among the huts of a native village, in reed-beds, or in thick woods. Throughout the greater portion of the year it is found in large flocks, whose proportions increase at times of feeding, in the morning and evening. With them safety lies in numbers, since they are constantly being preyed upon by Hawks (*Accipiter minullus*) and the Black-shouldered Kite (*Elanus cæruleus*) during the daytime, and the Red-legged Falcon (*Melierax gabar*) in the evening, when they resort to the reed-beds for the night. When a flock travels over a region where an attack is likely, a strong and rapid flight close to the ground is resorted to; but they do not always get off scot-free, for I have more than once seen a flock completely routed and one of their number borne away. In one locality the flocks are often considerable, and there is no better time to estimate their numbers than towards evening, when they journey to the reed-beds. An accustomed track is always taken; flock after flock will go "swishing" past in almost bewildering succession to some reed-bed ahead, into which they pitch like so many showers of bullets. Soon among the green cover of the fish-cane there will be hosts of Weavers making great chatterings, and when there is a pool close by they travel to the confines of the fish-cane and commence to drop down to the water to take their last drink for the night, a continuous string of birds circling down and up without interruption, like the endless chain on a wheel. It is a pretty sight. There is neither bickering nor quarrel, each bird has a chance to dip its beak into the water, and only when the last bird leaves the pool does the chattering or singing within the reed-bed cease. Then a confused rustling of innumerable wings takes place, telling the observer that these large flocks are retiring into the depths of the green cover for the night. From the winter-plumage to the brilliant summer-dress the change is slow, and during this period all stages of plumage may be observed, which impart to a flock a very mottled and curious appearance. By the end of January the males have completely assumed their remarkable breeding-dress, but their numbers

are small compared with the females and the birds of the previous season, who still keep the brown plumage, and the flock that awhile back was nothing more than a study in brown becomes all glorious with the gorgeous liveries of the male birds. It is a sight worth seeing to behold a flock go past you, twisting and turning in the bright sunlight across the wide mealie-field, bristling with fresh green blades, then on to the dark-green cover of a reed-bed, whose lowest depths they penetrate and fill with a soft, confused chattering, for all the world like a fugue in monotone while now and again the males climb to the top of the tallest reeds, their look-out posts, and the setting sun glancing on their plumage seems to turn each reed-head into a brilliant ruby.

35. *QUELEA QUELEA* (Linn.).

Locally distributed and found in large flocks frequenting the extensive beds of fish-cane near the river and making them resound with their singing, which is not unlike that of Starlings when together.

At the end of December the males were in full breeding-dress; while the plumage of the females had also undergone a change, the feathers of the upper parts having become darker, especially on the crown, the buffish-white edgings to the secondaries and feathers of the mantle having disappeared, the yellow edgings to the quills being more distinct, and the eye-stripe and the whole of the underparts being washed with a sandy buff.

36. *GRANATINA ANGOLENSIS* (Linn.).

Common and generally seen in pairs. On January 17 we found a nest almost ready for eggs among the small branches of an acacia-bush, and about 15 feet up. It was loosely constructed of dried grass, and presented a somewhat untidy appearance.

37. *ESTRILDA ASTRILD* (Linn.).

Plentiful. Very old males may be distinguished by the whole of the underparts being washed with rosy and the pink on the lower breast being brighter and more extended, while

in young birds the underparts are lighter, especially about the face and throat, which are whitish. In immature males the iris is red and the feet are brownish black.

38. *ESTRILDA SUBFLAVA* (Vieill.).

First met with at Senna, and found, in company with the former species, frequenting the small waste islands in the river that are overgrown with tall grass, from which it is difficult to drive them away. The chattering notes are by no means unpleasant, and are far more musical than those of *E. astrild*. In immature males the upper and under tail-coverts are the first to assume the adult coloration, followed by the feathers of the sides of the chest and flanks becoming barred.

*Adult* ♂. Iris red; legs and feet brown.

In young males the bill is black, while the iris is variable from a straw-colour to a brown.

39. *LAGONOSTICTA JAMESONI* Shelley.

The British Museum possesses two specimens of this species, an adult male and female from the Umvuli and Tatin rivers, Mashonaland, collected by Mr. Jameson. We found this bird by far the more scarce of the two *Lagonostictas* we met with.

Though observed on several occasions, especially at Zumbo, we only managed to obtain a single specimen near the Kafue river on January 12, out of a pair that frequented long grass close to the bank. In life they are easily to be distinguished from their close congener, *L. brunneiceps*, by their larger size and stouter tails, while they generally keep apart from the latter species and go in pairs.

*Adult* ♂. Total length (measured in flesh) 3·9 inches. Iris brown; bill dark bluish slate; legs and feet slate-colour.

40. *LAGONOSTICTA BRUNNEICEPS* Sharpe.

Frequents waste places, overgrown with long grass, near the river. On August 16 we found a nest placed in a small bush close to the ground. The nest was domed, and

composed of pieces of Indian corn-blades and lined with fine grass-bents and Guinea-fowl feathers. The eggs, three in number and much incubated, were white, and had average measurements of 5·8 × 4·6 inches.

In our series the adult males have the white spots on the sides of the breast well defined. An adult female shot on January 5 has these spots also clearly, and at the same time more numerous, marked; while two females obtained four months earlier, on September 6, do not possess any of these spots, and the crimson on the lores is less conspicuous. These breast-markings, therefore, appear to come with age. An immature male with a few feathers becoming crimson on the chin and forehead, obtained on August 10, resembles in plumage these two females.

#### 41. PYTELIA MELBA (Linn.).

Locally distributed, the male sex predominating. In September the young were abroad. On one occasion, September 8, we observed a pair of birds feeding four young ones perched in a row on a branch, and they were by no means shy, allowing of a close approach. The adults had then commenced to moult and were not in good plumage again till the middle of January. In the males the coloration of the plumage varies considerably in intensity. The scarlet of the rump and tail-feathers is very conspicuous in flight.

*Adult* ♂. Bill crimson; iris red; legs and feet light brown.

#### 42. HYPARGUS NIVEIGUTTATUS (Peters).

By no means common. A single specimen obtained near Tete.

#### 43. PLOCEIPASSER PECTORALIS (Peters).

Wherever the woods were composed of *Copaifera mopané* this species was numerous, distributing itself in colonies, each selecting a clump of trees, whose outside branches the birds festooned from top to bottom, generally on the lee side, with their nests. These "weaveries" were nearly always located near the confines of a village or close to a native path, their owners welcoming a passer-by with loud choruses



of mellow musical chirps, which became long and boisterous on an important advent, such as a string of carriers passing by. These woods are very silent, few birds seem to care to haunt them, and but for these Weavers the monotonous silence would scarcely ever be broken. The same tree is resorted to year after year, and the old nests used as roosting-places when the breeding-season is over, and these undergo constant repairing. The nests, built in pendent branches and about 15 to 20 feet from the ground, are composed of fine dried grass like dry hay, and generally lined with Guinea-fowl feathers, in construction resembling those of our House-Sparrow, and are also about the same size, the entrances of all the nests in one colony always facing one way, in an outward direction. They are, as a rule, untidy-looking structures, no attempt at trimming being made, and remind one forcibly of hedgerows in England, past which haycarts have journeyed and left bunches of hay on the branches. In flight this bird looks much like some large Wheatear, its white rump being very conspicuous. During the breeding-season the male sings rather prettily, melodious whistles being introduced into the usual string of musical chirps.

*Adult ♂.* Bill black; iris claret-colour; legs and feet brown.

#### 44. ANAPLECTES RUBRICEPS (Sundev.).

A rather shy species, keeping much to the thick portions of the woods in little flocks of five or six birds, in which the male sex predominates to a very large extent. On nearly every occasion there were on an average four males to one female. The white flower of the baobab offers them a good deal of attraction, and it is a pretty sight to witness them attacking the pendent half-opened buds as they hang head downward from some branch above, the immaculate whiteness of the flowers bearing a striking contrast to their vermilion-feathered breasts. From this habit of suspending themselves from branches, the white feathers of the abdomen become very grimy-looking.

The amount of vermilion on the breasts of individuals

varies considerably, while in many of our specimens the upper tail-coverts are washed with it as well as the feathers here and there on the abdomen and thighs.

*Adult* ♂. Total length (measured in flesh) 6·5 inches. Iris brown; bill light coral; legs and feet brown.

*Adult* ♀. Total length (measured in flesh) 5·5 inches. Iris brown; bill orange-red; legs and feet light brown.

In freshly-moulted females the white edgings to the secondaries are broad and conspicuous, but these disappear after a time through abrasion.

45. *HYPHANTURGUS OCULARIUS* (Smith).

Not common. Observed either singly or in pairs. It commences to build about the middle of November, and the vicinity of water is always chosen. Attempts at concealing the nest are sometimes made by interweaving fragments of the surrounding leaf into the network of fibre.

*Adult* ♂. Total length (measured in flesh) 6·14 inches. Iris lemon-yellow; legs and feet slate.

*Adult* ♀. Total length (measured in flesh) 6·3 inches. Iris lemon-yellow; legs and feet slate.

46. *XANTHOPHILUS XANTHOPTERUS* (Finsch & Hartl.).

We obtained two immature males on August 8 near the Shiré river, where Sir John Kirk obtained the type of the species.

*Young*. General colour above buffish brown, becoming nearly uniform on the rump and upper tail-coverts; feathers of mantle and back with dark centres; primary- and wing-coverts brown, edged with pale yellow; quills brown, with broad yellow bases on the inner webs, outer edges greenish yellow; tail-feathers greenish brown, edged with olive-yellow; crown of head and nape olive-green, with narrow dusky centres; cheeks, sides of head, and throat pale yellow, remainder of underparts white, washed with pale buffish brown, more distinct on the breast and flanks; under wing-coverts yellow; upper mandible black, the lower horn-colour; iris hazel; legs and feet brown.

In the immature bird the quills and tail-feathers appear to be the first to assume the adult state.

47. *XANTHOPHILUS XANTHOPS* (Hartl.).

We first met with this species at Chicowa, frequenting the shady portions of the river's bank in pairs and in company with Bulbuls (*Pycnonotus layardi*). As we journeyed further west they became more plentiful, and at the end of November building had commenced. The tunnelled nests were hung from pendent branches of thick bushes near running water, and were never in colonies like those of other Weavers, but each pair of birds had their own particular thicket. The song of the male is a loud running chatter, kept up without intermission for some seconds. The plumage of the immature male is similar to that of the adult female.

*Adult* ♂. Total length (measured in flesh) 7·5 inches, wing 3·54. Iris yellow; bill black; legs and feet brown.

*Adult* ♀. Total length (measured in flesh) 7 inches, wing 3·4. Iris lemon-yellow; upper mandible brownish horn, lower lighter.

48. *HYPHANTORNIS SHELLEYI* Sharpe.

We found this Weaver breeding in considerable colonies in high trees at Zumbo towards the end of December. The adult females in the breeding-season have the entire under surface a rich yellow like the throat, while the immature females, with the exception of a few feathers becoming yellow, have the breast and abdomen white, similar to the adult females of *H. vitellinus*. In Cat. Brit. Mus. vol. xiii. p. 464, the inference made by Dr. Sharpe that "males in winter plumage have the entire under surface yellow like the throat, instead of the abdomen white," should therefore be referred to the adult female in breeding-plumage, and the description of his adult female to that of the immature bird. This change of plumage in the females of this species is identical with that of *H. nigriceps*, and the same is probably the case with the females of *H. cabanisi*.

During our stay at Zumbo we had a good opportunity of observing the breeding-habits of this Weaver. The males were continually at work building the nests, while the females hardly ever came near them, but were always abroad,

each bird being in the company of another, so much so that they at first impressed us as being male and female till we procured specimens. It is quite possible that these Weavers are polygamous.

*Adult* ♂. Bill black; iris orange-red; legs and feet reddish brown.

*Adult* ♀. Bill brownish horn-colour; iris orange-yellow.

49. *HYPHANTORNIS CABANISI* Peters.

*Adult* ♂. Total length (measured in flesh) 5·2 inches. Iris lemon-yellow; legs and feet slate.

50. *HYPHANTORNIS NIGRICEPS* Layard.

The commonest of the Yellow Weavers, especially from Tete downward, consorting with other Weavers and Finches on waste land near the river. They breed in large colonies, hanging their nests to the fish-cane that fringes the water's edge. Such a spot presents an animated appearance in the breeding-season, these bright-coloured birds rushing backward and forward among the deep green reeds, intent upon their building operations, while the brown nests of the previous season present a notable contrast to those newly made, and are hardly distinguishable in colour from the reeds.

We obtained a fine series of this species in several stages of plumage. Like the adult females of *H. shelleyi*, the immature females become yellow on the underparts, while young males resemble in plumage the immature female.

*Adult*. Bill black; iris red; legs and feet brown.

In the immature birds the iris is hazel; upper mandible brown, lower light horn-colour.

51. *ORIOLOUS AURATUS* Vieill.

Scattered individuals observed for the first time at Zumbo on December 12, frequenting the thiek woods, and in company now and again with young birds. The adults were then in a moulting condition and were difficult to approach, their clear whistling note being more often heard.

52. *ORIOLOUS LARVATUS* Licht.

This Oriole appears to be migratory in the Zambesi region. Only one individual observed near Senna on July 26. According to Mr. Marshall this species is also migratory in Mashonaland.

53. *LAMPROTORNIS MEVESI* (Wahlb.).

Found in small parties on low ground overgrown with brushwood, skirting the hills. By the middle of October these parties had split up into pairs and were then about the only birds to be seen during the heat of the day in the mealie-fields, preying upon locusts. The alarm-note is a harsh screech. I take the following observation from my note-book:—"While I write, three Long-tailed Starlings are sporting themselves on the bare dried-up ground close to my tent, busy picking up small grasshoppers. Their behaviour and gait remind me of our Blackbird: first a violent rush forward, then a sudden dip of the head to pick up some morsel, and then on again, the whole time their long tails being jerked up and down."

54. *LAMPROCOLIUS SYCOBIUS* (Licht.).

Inhabits different localities along the river from Tete onward in small flocks, in which the males predominate to a large extent over the females. A male obtained on October 19 had organs in breeding condition, while by the end of December large flocks both of old and young frequented the game country near the Kafue river, often being found in company with the preceding species and also *Amydrus morio*.

The males emit chattering notes, by no means unpleasant, which are uttered from the topmost twigs of tall trees. The call-note is a clear musical whistle.

55. *AMYDRUS MORIO* (Linn.).

Not common. Only three specimens obtained. When in flocks they are shy and fly at a considerable altitude. They breed about the middle of August, generally choosing holes in the baobab-trees for their nests, and to the selected trees the pairs resort both morning and evening some time before nesting commences. This *Amydrus* has a clear long-drawn

note which it utters from the tops of trees. It is fond of the vicinity of running water, especially where there are patches of rocks in mid-stream, to which it resorts at regular intervals during the day, possibly for the purpose of feeding on small mollusks. The chestnut on the wings is very conspicuous in flight.

56. *DILOPHUS CARUNCULATUS* (Gm.).

During our stay at Chicowa a flock of young males visited pools of water in an extensive reed-bed near the river on September 4.

*Immature* ♂. Bill brownish horn; iris brown; soft parts greenish yellow; legs and feet brown.

57. *CORVULTUR ALBICOLLIS* (Lath.).

By no means common, being observed in pairs. Unlike *Corvus scapulatus*, it is a resident about the Zambesi, while in whatever locality it was seen the latter species was absent. During our stay at Mesanangue in August, a pair continually visited a patch of rocks skirting the river, always coming from and going in the direction of some rocky hills, where no doubt they had a nest. At Zumbo, on November 13, we obtained an adult male out of a pair. It was in a moulting condition.

58. *CORVUS SCAPULATUS* Daud.

This species was seldom observed in pairs, but in large flocks, and appears to be migratory in the Zambesi region. When visiting Maramao, near Shupanga, on February 9, we disturbed a large number of these birds in a mealie-field. At our approach they all rose up with a great uproar, and circled in the air after the manner of Rooks.

59. *DICRURUS AFER* (Licht.).

This Drongo is ubiquitous, especially on the lower reaches of the river. His presence becomes quite boring after a time, while he often succeeds in depriving the collector of a rare specimen by uttering his harsh notes of warning just at the critical moment. Marpela-fields in the vicinity of villages attract numbers of these birds, where they may be

seen throughout the heat of the day perched on the dried-up marpela-stalks of the year before, from which they swoop upon locusts and other insects. This Drongo is quarrelsome and takes a delight in bullying smaller members of his fraternity, with the result that he is generally left severely alone, all the other birds giving him a wide berth. Now and again he becomes very eccentric in his flight, darting vertically up into the air, while he often soars to a considerable height. When a portion of ground is fired by the natives, numbers of these birds may be seen on the confines of the fire, catching the insects that are driven out by the heat, while some fly even into the flames, and we have seen more than one bird crippled.

The notes of the male bird are screeching and metallic, and these are rendered into a kind of chattering song when the pairing-season approaches. At that time the presence of this Drongo becomes less noticeable, since it retires to the thick woods to breed. Towards the end of December the young were abroad, generally in company with one of the parent-birds. They are very fond of frequenting fish-cane overhanging pools of water, where they congregate towards evening, and may be seen constantly flying out across the water in short circuits after their prey, or mounting vertically into the air; while they are always the last birds to retire for the night, not unfrequently keeping the Nightjar company. Off and on the males utter their peculiar songs, commencing with a clear mellow note, which leads one to expect a string of pretty ones of equal value, but the clear note soon terminates in the chatter already mentioned.

The immature bird has the underparts a dull brown; the feathers of the under wing-coverts, abdomen, and under tail-coverts being edged with white, which is gradually lost as the feathers become suffused with the steel-blue gloss of the adult.

#### 60. PRIONOPS TALACOMA Smith.

Not numerous, fond of thick places, travelling in perfect silence in small parties through the monotonous woods of

*Copaijera mopane*, where they are almost the only birds to be seen. Sometimes they are pursued by Drongo Shrikes, which despoil them of their prey. They have an airy flight, which gives one the idea that they are made of paper.

*Adult.* Iris and soft parts yellow; legs and feet coral-red.

61. SIGMODUS TRICOLOR (Gray).

*Adult* ♂. Total length (measured in flesh) 8.2 inches. Bill coral-red, yellowish at tip; iris and eyelids red; legs and feet coral.

62. CAMPOPIHAGA NIGRA Vieill.

Observed singly and in pairs towards the breeding-season, which commences in December. They keep much to the tall acacia-trees, and their flight is rapid and straight. The glossy steel-black of their plumage serves always to distinguish them from the Drongo Shrikes in whose company they are not unfrequently found.

*Adult* ♂. Total length (measured in flesh) 7.6 inches. Iris brown; throat and gape yellow; legs and feet brown.

63. ENNEOCTONUS COLLURIO (Linn.).

The Red-backed Shrike appeared near Zumbo on November 29, and by the end of December it became very numerous, adult males being especially noticeable. This bird soon got into our bad books, and it was not long before it became a byword among us, for whenever one of our party returned to camp the question, "Have you shot a Red-backed Shrike?" was invariably asked. Its power of mimicking the poses of other birds was most remarkable, and far more resorted to than it is in England. This Shrike seemed to prey chiefly on the small Estreldas and Sun-birds, owing probably to the scarcity of insect-life, and therefore some kind of deception was necessary. At one time this bird would sit close to a bough, all puffed out, looking for all the world like some comfortable Weaver. At another time it would perch with straightened legs and shoulders all hunched up, after the manner of a little Hawk, or put itself in a climbing position, like a Warbler. Owing to these assumed attitudes the



Red-backed Shrike frequently fell a victim to our guns, greatly to our disgust on finding ourselves so thoroughly deceived.

64. *NILAUS NIGRITEMPORALIS* Reichen.

By no means common. Our four specimens were obtained on high ground clothed with the tree *Copaiifera mopane*. A male obtained on October 7 had breeding-organs much developed, while on December 31 a nestling was procured. The call-note is a loud whistle.

*Adult* ♂. Total length (measured in flesh) 5·9 inches. Bill dark lead-colour; iris hazel; legs and feet slate.

65. *LANIARIUS MOSAMBICUS* (Fisch. & Reichen.).

From Tete onwards this species is well distributed along the river, for hardly a day passed without our hearing its clear-drawn piping notes. This Shrike abides in reed-beds, belts of fish-cane, and also frequents open land that is interspersed with clumps of thick bushes. When we first observed this species at the beginning of August breeding had not commenced, and it was then very shy and difficult of approach; in fact it was more often heard than seen. The call-note is peculiar, very gruff, and might be likened to the croak of the bull-frog, while it is at the same time ventri-loquial. In the pairing-season, when seeking a mate, this species makes continual use of this note, which it utters from the top of some high tree. At almost regular intervals the note is given out in the same strain, becoming, however, more frequent and loud when the bird receives an answer, which may often come from a considerable distance. When the breeding-time arrives the different pairs resort to reed-beds and thick places, and with this coming of their breeding activity they lose a great deal of their shyness, and may frequently be observed stealing with low measured flight from one thick refuge to another. On approaching a resort the male will immediately utter his gruff frog-like croak to the female, who answers him with a similar note, but wheezy in strain and rather long-drawn. The ventri-loquial croak of the male is often uttered as a safeguard against danger in order to conceal his exact whereabouts,

and I have frequently witnessed an example of this when a Hawk has been hovering over the reed-bed haunt of this bird. Besides the call-note, the male bird utters a remarkable love-cry. With a sharp clapping together of the wings, a soft clarion-like whistle is given out, followed immediately by a very peculiar note, in sound just as when a hammer is tapped against a sheet of tin. As the season advances this whistle becomes cracked and less clear in tone.

This Shrike is full of activity. He will wend his way through a maze of thick twigs and run up the limbs of a tree with extraordinary agility, his head all the while strained forward with anxious look, as if he were fleeing from some invisible foe. Although he is of a quarrelsome nature, and is continually worrying other members of the bird-fraternity that frequent the same thicket as he does, yet they seem to tolerate him, since he never fails to warn them of approaching danger by uttering his frog-like notes of alarm. More than once has this bird deprived me of a fine specimen that was almost within my grasp. The food is varied. The small Estreldas that thread their way through the reeds and thickets are often attacked and become his prey.

We obtained a fine series of this Shrike, both immature and adult. In two fully adult specimens the white on the secondaries is confined to only one of the wing-feathers; in the immature birds the white is sometimes on two or three of the secondaries, and in one instance the third white stripe is in the process of disappearing. Again, the adults have no white tips to the outer tail-feathers, while all the others possess them. We are therefore of the opinion that the number of the white stripes on the wing-feathers is of no specific value, and that the number decreases with age, while it is quite possible that in very old birds the wing-feathers become entirely black. To the same cause may be attributed the disappearance of the white tips, which in very young birds are buffish white, to the outer tail-feathers. Furthermore, in the series before us, we find that the buffish tints

of the underparts in the immature birds are absent in the adults, whose breasts are a creamy white, a beautiful rosy tinge pervading the feathers in life.

*Adult* ♂ (near Tete). Total length (measured in flesh) 9.14 inches, wing 3.64, culmen 0.85, tail 4. Iris hazel; legs and feet slate.

*Adult* ♂ (near Kafue river). Total length (measured in flesh) 9 inches, wing 3.7, culmen 0.8, tail 4.

*Adult* ♀ (near Tete). Total length (measured in flesh) 8.3 inches, wing 3.4, culmen 0.8, tail 3.9.

*Adult* ♀ (Chicowa). Wing 3.6 inches, culmen 0.79, tail 3.95.

#### 66. DRYOSCOPIUS CUBLA (Shaw).

Well distributed. Breeds towards the end of November, at which time of the year its food consists to a great extent of the buds of acacia-trees. Hardly a day passed without our hearing its clear bell-like note. As the breeding-season approaches, this Shrike makes a "whirring" sound with its wings when in flight; it seems to be performed only by the male, presumably in order to make the female aware of his presence, and especially is this noticeable when the undergrowth is thick with leaf.

#### 67. TELEPHONUS SENEGALUS (Linn.).

This species takes the place of *T. minor*, to a great extent, on the higher reaches of the river from Zumbo onward. There is no difficulty in identifying this large Shrike, while its habits, too, are somewhat different. Unlike *T. minor*, it never sings on the wing, but always when stationary; and further, it does not on the approach of the breeding-season make a "whirring" sound with the wings. It is altogether of a more retiring nature. The song, uttered from some thicket, is melodious, and might be rendered "tu-tu-tui-tui," constantly repeated.

Specimens obtained at the beginning of January had the breeding-organs largely developed.

#### 68. TELEPHONUS MINOR Reichen.

This Shrike keeps to long grass and thick bushes, imitating

very often, when pursued, the call-note of the Quail. In the breeding-season the male bird will continually rise up with a whirring sound of the wings vertically into the air, and then drop to earth again in a curious manner, as if it had suddenly lost control of its flight and was endeavouring to reach the ground the best way it could, uttering the whole time a string of musical notes, descending in scale, the rendering of which is very true.

*Adult ♂*. Bill dark lead-colour; iris claret-colour; legs and feet slate. In immature birds the bill is light horn-colour and the iris hazel.

69. *MALACONOTUS SULPHUREIPECTUS* (Less.).

Breeds in November. On June 1st, while forcing our way through a thick wood, we discovered a nest containing three eggs, built in an acacia-bush, and about 30 feet up. It was of slight construction, consisting of small fine bents for a lining and coarser ones outside. The eggs have a greenish white ground-colour, spotted and blotched all over with brown, chiefly at the larger end, so as to form a zone. Average measurements  $\cdot 85 \times \cdot 62$  inch.

*Adult ♂*. Bill black; iris reddish brown; legs and feet slate.

In very young birds the chin and throat are white, contrasting strongly with the uniform yellow breast.

70. *MALACONOTUS POLIOCEPHALUS* (Licht.).

71. *NICATOR GULARIS* Finsch & Hartl.

This uncommon Shrike is seldom seen away from thick woods, being of an extremely shy nature. A male obtained on December 23 had sexual organs in breeding condition.

*Adult ♂*. Iris brown; throat and eyelids yellow; legs and feet slate.

[To be continued.]